

enclosed piezoelectric sensor device . . . completely immersed in the liquid," and claim 14 recites that the "container is hermetically sealable." Additionally, the Specification states:

In addition, a hermetic seal of the container may be established without any negative effect of the electric connection of the sensor device to the external electronic control/analyser unit.
(Specification, p. 6, ll. 14-17).

Thus, in at least one embodiment, the hermetic seal is established after the introduction of liquid into the container. In this manner, the protective container is hermetically sealable and liquid contacts the piezoelectric sensor device, and the language of claim 14 is clear. Accordingly, Claim 14 complies with 35 U.S.C. §112, second paragraph. It is, therefore, respectfully requested that this rejection be withdrawn.

Claims 1-7 and 15-19 stand rejected under 35 U.S.C. §103 as being unpatentable over the document Sensors and Actuators by Martin et al. ("the Martin reference") in view of United States Patent No. 6,479,763 to Igaki et al. ("the Igaki reference").

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to

render the claims *prima facie obvious*. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959); M.P.E.P. §2143.01.

The Martin reference and Igaki reference do not disclose each and every element recited in amended Claim 1. Amended Claim 1 recites:

A system for measuring a property of a liquid, comprising:
a immersible container having a cap, a bottom, an enclosed piezoelectric sensor device and at least one of a liquid inlet and liquid outlet,
the immersible container being immersed in the liquid during a measurement of the property of the liquid,
the piezoelectric sensor device being completely immersed in the liquid during the measurement of the property of the liquid, the sensor including:
electric contact points for an electric control and which are resistant to the liquid;
electric lead conductors which are resistant to the liquid and which are connectable to a measuring unit outside the liquid; and
a suitable conductive adhesive containing metal particles and for coupling the electric lead conductors to the electric contact points.

The Martin reference discloses a monolithic sensor to measure liquid density and viscosity. (Martin, Fig. 8). However, the Martin reference does not disclose an immersible container that encloses the sensor, or an immersible container having a liquid inlet or liquid outlet. Instead, the sensor disclosed in the Martin reference seals in the liquid to be measured in a container that does not have an opening for liquid inlet or outlet. Additionally, the sensor disclosed in the Martin reference is not immersed in the liquid during the measurement of the liquid. The Igaki reference also fails to disclose an immersible container that encloses a sensor, or an immersible container having a liquid inlet or liquid outlet.

Since the Martin and Igaki references do not disclose each and every element recited in Claim 1, the Martin and Igaki references do not render amended Claim 1 or its dependent Claims 2-7 and 15-19 obvious under 35 U.S.C. §103. It is, therefore, respectfully requested that this rejection be withdrawn.

Claims 8-14 stand rejected under 35 U.S.C. §103 as being unpatentable over the Martin reference in view of the Igaki reference and further in view of United States Patent No. 4,728,844 to Wilson et al. (“the Wilson reference”).

Claims 8 and 12 have been canceled and Claim 1 has been amended to incorporate the limitations of Claims 8 and 12. Therefore, Claim 1 will be addressed in connection with the rejection of Claims 8 and 12.

As discussed above, the Martin and Igaki references fail to disclose at least an immersible container that encloses a sensor, or an immersible container having a liquid inlet or liquid outlet. The Wilson reference similarly fails to disclose these limitations.

The Office Action asserts that the Wilson reference “teaches a protective container in Fig. 7, wherein the vibratory element is sandwiched between 12 and 16,” and that “it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a protective container in Martin to shield the sensitive element from hazards.” The Applicants respectfully submit that the Examiner’s assertions are unsupported by the applied prior art.

The Wilson reference discloses a piezoelectric transducer that extends across an opening in one face of a casing. (Wilson, Abstract). A backing material is in direct contact with the transducer, and the casing is filled with resin. (Wilson, col. 3, ll. 13-51). The configuration of this transducer is used to emit an ultrasound signal and to pick up a returning echo. (Wilson, col. 4, ll. 32-35). There is no disclosure or suggestion that such an arrangement can be used to measure a property of a liquid, as recited in Claim 1. Additionally, since the transducer has a backing in direct contact with one side, it is not possible to immerse the transducer in a liquid to be measured. Moreover, since the transducer is extended over an opening of the casing, the casing does not enclose the transducer. Thus, applying the teachings of the Wilson reference to the Martin reference would render the sensor disclosed in the Martin reference unsuitable for its intended purpose, thereby defeating the obviousness conclusion as a matter of law. See MPEP 2143.01.

Since the Martin, Igaki, and Wilson references fail to disclose each and every limitation of amended Claim 1, and since the resultant combination suggested by the Office Action would render the sensor disclosed in the Martin reference unsuitable for its intended purpose, the Martin, Igaki and Wilson references do not render amended Claim 1 or dependent Claims 9-11, 13 and 14 obvious under 35 U.S.C. §103. It is, therefore, respectfully requested that this rejection be withdrawn.

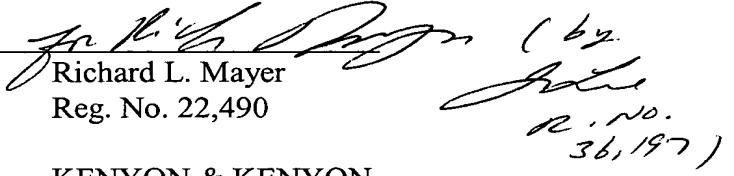
CONCLUSION

In light of the foregoing, it is respectfully submitted that all of the pending Claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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AMENDMENT VERSION WITH MARKUPS

1. (Amended) A system for measuring a property of a liquid, comprising:

an immersible container having a cap, a bottom, an enclosed piezoelectric sensor device, and at least one of a liquid inlet and liquid outlet,

the immersible container being immersed in the liquid during a measurement of the property of the liquid,

[a]the piezoelectric sensor device [which is]being completely immersed in the liquid during the measurement of the property of the liquid[to be measured], the sensor including:

electric contact points for an electric control and which are resistant to the liquid;

electric lead conductors which are resistant to the liquid and which are connectable to a[n electronic control/analyizer]measuring unit [arranged]outside the liquid; and

a suitable conductive adhesive containing metal particles and for coupling the electric lead conductors to the electric contact points.

9. (Amended) The system of claim 1[8], further comprising:

bushings situated in at least one of the cap and the bottom of the protective container, wherein the electric lead conductors are led through the protective container through the bushings.

11. (Amended) The system of claim 1[8], further comprising:

connecting leads in at least one of the cap and the bottom of the protective container, wherein the electric lead conductors are connectable to the connecting leads.

13. (Amended) The system of claim 1[12], wherein the at least one opening is situated in the cap of the protective container.

14. (Amended) The system of claim 1[8], wherein the protective container is hermetically sealable.